

A new genus and three new species of Monorchidae (Trematoda) from freshwater fish of Rondônia State, Brazil

by

Vernon E. Thatcher*

Dr. Vernon E. Thatcher, Instituto Nacional de Pesquisas da Amazônia (INPA), CPBA,
Caixa postal 478, 69011-611 Manaus, AM, Brazil.

(Accepted for publication: August, 1996).

Abstract

A new genus and three new species of freshwater Monorchidae (Trematoda) are described from the intestinal tracts of fish of Rondonia State, Brazil. *Sphericomonorchis spinulosus* gen. et sp. nov. from *Crenicichla johanna* HECKEL, is characterized as having a small, compact body, a large, spherical testis near the posterior extremity and vitelline follicles lateral to the acetabulum. *Paraproctotrema delicata* sp. nov., from *Boulengerella lucia* (CUVIER), is a slender species having a large acetabulum with vitellaria postero-lateral to it, a small cirrus sac and post-testicular uterine loops. The third species, *Genolopa magnacirrus* sp. nov., from the same host, has a cirrus sac from thirty to fifty percent of the body length, a testis near the posterior extremity and vitellaria well posterior to the acetabulum.

Keywords: Trematodes, fish parasites, monorchids, Amazon.

Resumo

Um novo gênero e três novas espécies de Monorchidae (Trematoda) de água doce são descritos dos tratos intestinais de peixes do estado de Rondônia, Brasil. *Sphericomonorchis spinulosus* gen. et sp. nov. de *Crenicichla johanna* HECKEL se caracteriza por ter um corpo que é pequeno e compacto, um testículo grande e esférico situado perto à extremidade posterior e folículos vitelínicos laterais ao acetábulo. *Paraproctotrema delicata* sp. nov., de *Boulengerella lucia* (CUVIER), é uma espécie fina que tem um acetábulo grande com as glândulas vitelínicas postero-laterais ao mesmo, uma bolsa do cirro pequeno e alças uterinas posterior ao testículo. A terceira espécie, *Genolopa magnacirrus* sp. nov., do mesmo hospedeiro, tem uma bolsa do cirro de trinta até cinquenta por cento do comprimento do corpo, um testículo perto à extremidade posterior e glândulas vitelínicas bem posterior ao acetábulo.

*Research Fellow of the Brazilian National Research Council (CNPq), Brasília, Brazil.

Monorchiidae ODHNER, 1911, is a family of trematodes found mainly in marine fishes. YAMAGUTI (1971) listed 36 genera only 4 of which were from freshwater. Of the latter, none have been reported to occur in South America. The monorchiids of Brazil have been but little studied. TRAVASSOS et al. (1969) mentioned only two species that had been taken from Brazilian coastal waters and AMATO (1982) cited 7 species from the coast of Santa Catarina State. The present paper describes three new species and a new genus from the Jamari River of Rondonia State. This is believed to be the first report of monorchiids in freshwater fish in South America.

Material and methods

Fish hosts were netted, identified and eviscerated, after which the intestinal tracts were opened and placed in a 1:4000 formalin solution to relax and kill the trematodes. After 30 minutes, enough formaldehyde was added to the solution to bring the concentration up to about 10 %. The preserved digestive tracts were examined by washing and hand sedimentation. The worms were stained in 95 % alcohol containing equal parts of eosin and orange-g stains. They were then placed in pure phenol for dehydration and afterwards cleared in methyl salicylate and mounted in Canada balsam. Drawings were made with the aid of a Zeiss drawing tube. Measurements were made with a measuring ocular and are given in micrometers (μ m). The means are followed by the extremes enclosed in parentheses.

Systematic Section

Monorchiidae ODHNER, 1911

Sphericomonorchis gen. nov.

Generic diagnosis: With the characters of the family. Body small, ovoid, slightly flattened; tegument spinous. Oral sucker subterminal; prepharynx short; pharynx spherical; esophagus short; ceca long, stout. Acetabulum pre-equatorial. Testis single, large, spherical, near posterior extremity; cirrus sac large, elongate, containing spinous cirrus, seminal vesicle and prostatic cells; genital pore medial, between intestinal bifurcation and acetabulum. Ovary subspherical or irregularly lobate, immediately pretesticular, lateral to midline; vitellaria of two bunches of large follicles, lateral to acetabulum; cirrus receptacle elongate, saccular, spinous; uterus occupying space between testis and acetabulum; eggs small, numerous. Excretory vesicle tubular, pore terminal. Intestinal parasites of freshwater fish.

Type species: *S. spinulosus* sp. nov.

Sphericomonorchis spinulosus sp. nov. (Fig. 2)

Host: *Crenicichla johanna* HECKEL: Cichlidae.

Site: Intestinal tract.

Locality: Jamari River, Rondonia State, Brazil.

Holotype and 6 Paratypes: Invertebrate Collection, Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, AM, Brazil. Three additional paratypes: Helminth Collection, University of Nebraska State Museum (UNSM), Harold W. Manter Laboratory, Lincoln, Nebraska.

Etymology: The generic name is in reference to the spherical shape of the single testis and the specific name calls attention to the spiny tegument.

Species description (10 specimens measured): Body 826 (658-1,120) long by 338 (165-462) wide; tegument spinous to posterior extremity. Oral sucker large, 91 (77-110) long by 109 (93-132) wide;

prepharynx short, 22 (11-38) in length; pharynx subspherical, 51 (33-66) long by 52 (38-66) wide; esophagus short, 42 (27-66) in length; ceca moderately thick, nearly full length, 45 (33-55) in maximum diameter. Acetabulum large, 131 (110-148) long by 133 (110-143) wide. Testis large, spherical to ovoid, near posterior extremity, measures 203 (165-231) long by 187 (137-248) wide; cirrus sac elongate, club-shaped, contains spinous cirrus, seminal vesicle and prostatic cells, measures 208 (192-220) long by 55 (38-66) in maximum diameter. Ovary measures 102 (55-176) long by 94 (66-121) wide; vitelline follicles, 43 (33-60) long by 31 (22-38) wide; cirrus receptacle, 292 (220-341) long by 63 (50-82) in maximum diameter. Eggs numerous, measure 20 x 12 (16-24 x 10-14).

Paraproctotrema YAMAGUTI, 1934

Paraproctotrema delicata sp. nov. (Figs. 1 & 4)

Host: *Boulengerella lucia* (CUVIER).

Site: Intestinal tract.

Locality: Jamari River, Rondonia State, Brazil.

Holotype and 3 Paratypes: Invertebrate Collection, Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, AM, Brazil. Two additional paratypes: Helminth Collection, University of Nebraska State Museum (UNSM), Harold W. Manter Laboratory, Lincoln, Nebraska.

Etymology: The species name comes from the Latin root meaning slender or delicate.

Species description (based on 6 specimens measured): With the characters of the family. Body elongate, slender, little flattened, tapered towards extremities, measures 1,109 (791-1,677) long by 279 (210-280) wide. Tegument spinous on anterior half of body. Oral sucker large, 79 (74-104) long and 101 (76-127) wide; pharynx longer than wide, measures 59 (46-74) long by 51 (41-69); prepharynx long, 149 (46-265); esophagus measures 132 (46-276) in length; ceca slender, measuring 22 (11-28) in diameter. Acetabulum large, preequatorial, measures 105 (90-115) in diameter. Testis ovoid, postequatorial, measures 172 (129-258) long and 111 (86-172) wide; cirrus sac banana-shaped, extending to slightly posterior to acetabulum, measures 236 (177-301) long and 56 (41-78) in diameter, contains spinous cirrus, seminal vesicle and prostatic cells; genital pore immediately pre-acetabular, median. Ovary subspherical, measures 72 (46-115) long and 66 (46-80) wide; vitelline follicles small, 14 (9-23) in diameter, arranged in two compact groups, one on either side, postero-lateral to acetabulum; cirrus receptacle saccular, measures 155 (127-189) long and 59 (46-69) in maximum diameter; uterus extensive, eggs numerous, measure 17 x 8 (16-18 x 7-9). Excretory vesicle Y-shaped, pore terminal.

Genolopa LINTON, 1910

Genolopa magnacirrus sp. nov. (Figs. 3 & 5)

Host: *Boulengerella lucia* (CUVIER).

Site: Intestinal tract.

Locality: Jamari River, Rondonia State, Brazil.

Holotype and 5 paratypes: INPA. Three additional paratypes: UNSM.

Etymology: The specific name is in reference to the unusually large male copulatory organ found in this species.

Species description (based on 9 specimens measured): Body elongate, cylindrical, measures 993 (572-1,352) long by 262 (167-361) wide; tegument spinous to posterior extremity. Oral sucker measures 95 (70-115) long by 109 (70-138) wide; prepharynx, 100 (69-161) long; pharynx, 65 (55-92) long and 60 (46-87) wide; esophagus, 105 (58-179) in length. Acetabulum pre-equatorial, measures 99 (78-115) in diameter. Testis large, near posterior extremity, measures 267 (138-430) long by 142 (80-206) wide; cirrus sac large, 40 % (36-76 %) of body length, measures 395 (299-559) long and 84 (46-154) in maximum

diameter, contains spiny cirrus, seminal vesicle and prostatic cells; genital pore between intestinal bifurcation and acetabulum. Ovary pretesticular, submedian, measures 79 (58-115) long and 62 (58-69) wide; vitelline follicles on either side of body, lateral to ovary, in posterior one-third of body, measure 17 (10-30) in diameter; cirrus receptacle, 187 (149-258) long and 51 (35-86) in maximum diameter; uterus mainly pretesticular, eggs numerous, 18 x 9 (16-23 x 8-10). Excretory vesicle Y-shaped, pore terminal.

Discussion

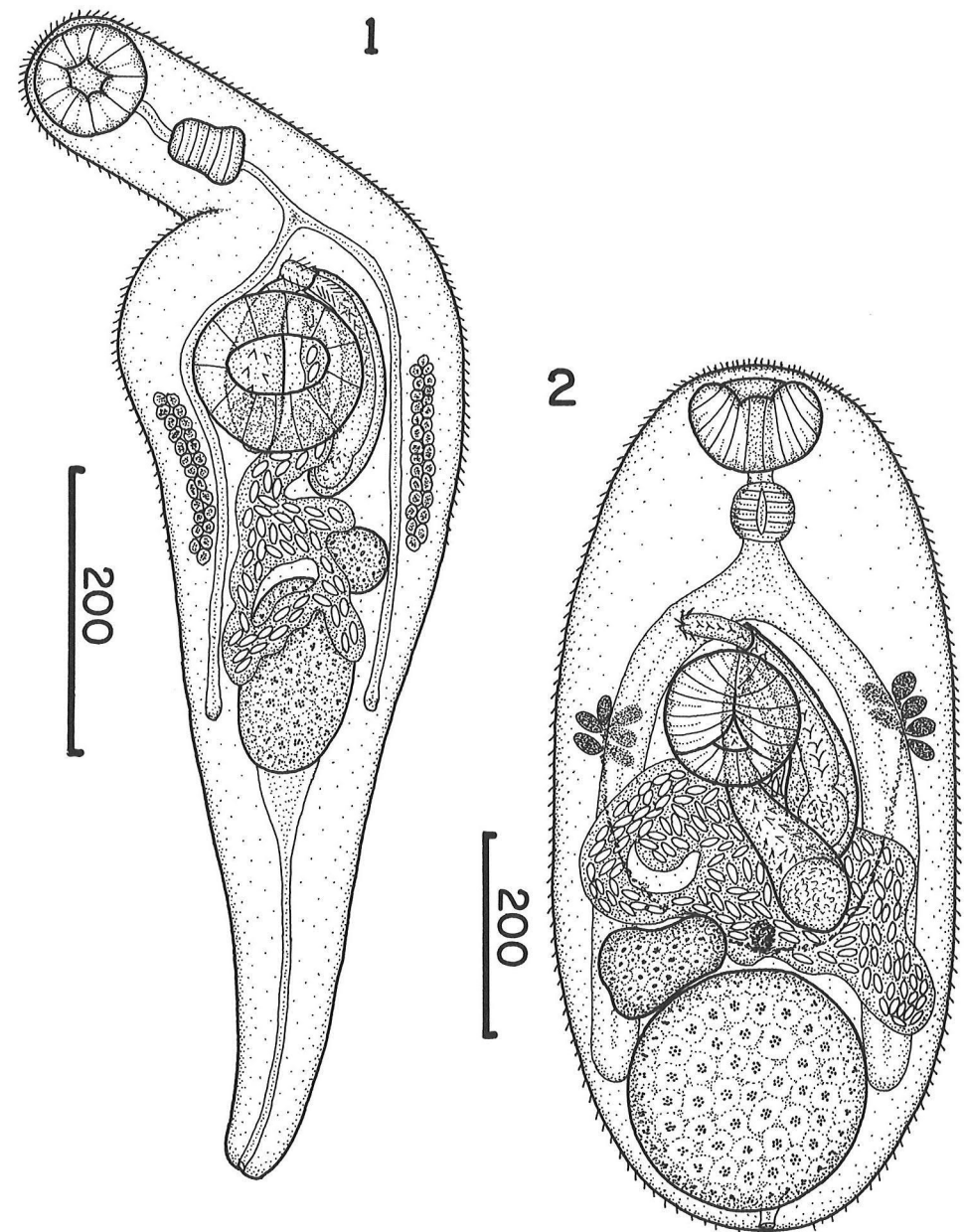
Sphericomonorchis gen. nov. has clumps of vitelline follicles directly lateral to the acetabulum and a large, spherical testis near the posterior extremity of the body. The uterine loops are mainly pretesticular and in any case do not extend posterior to the testis. *Paraproctotrema delicata* sp. nov. somewhat resembles *P. brevicacum* MANTER, 1942, but differs from the latter in having larger suckers and longer ceca. *Genolopa magnacirrus* sp. nov. resembles *G. cacuminata* NICOLL, 1915, but differs from that species in a number of important characters. The vitelline follicles are more limited in extent, the testis is nearer to the posterior extremity, the suckers are larger and the cirrus sac is much larger. Neither *Paraproctotrema* nor *Genolopa* has previously been reported from freshwater.

Acknowledgments

This study was financed in part by the "Polonoroeste Project" which sought to identify the fauna of Rondônia State, Brazil. Thanks are extended to José Celso de Oliveira Malta who collected and identified the host fish and made their fixed intestinal tracts available for study.

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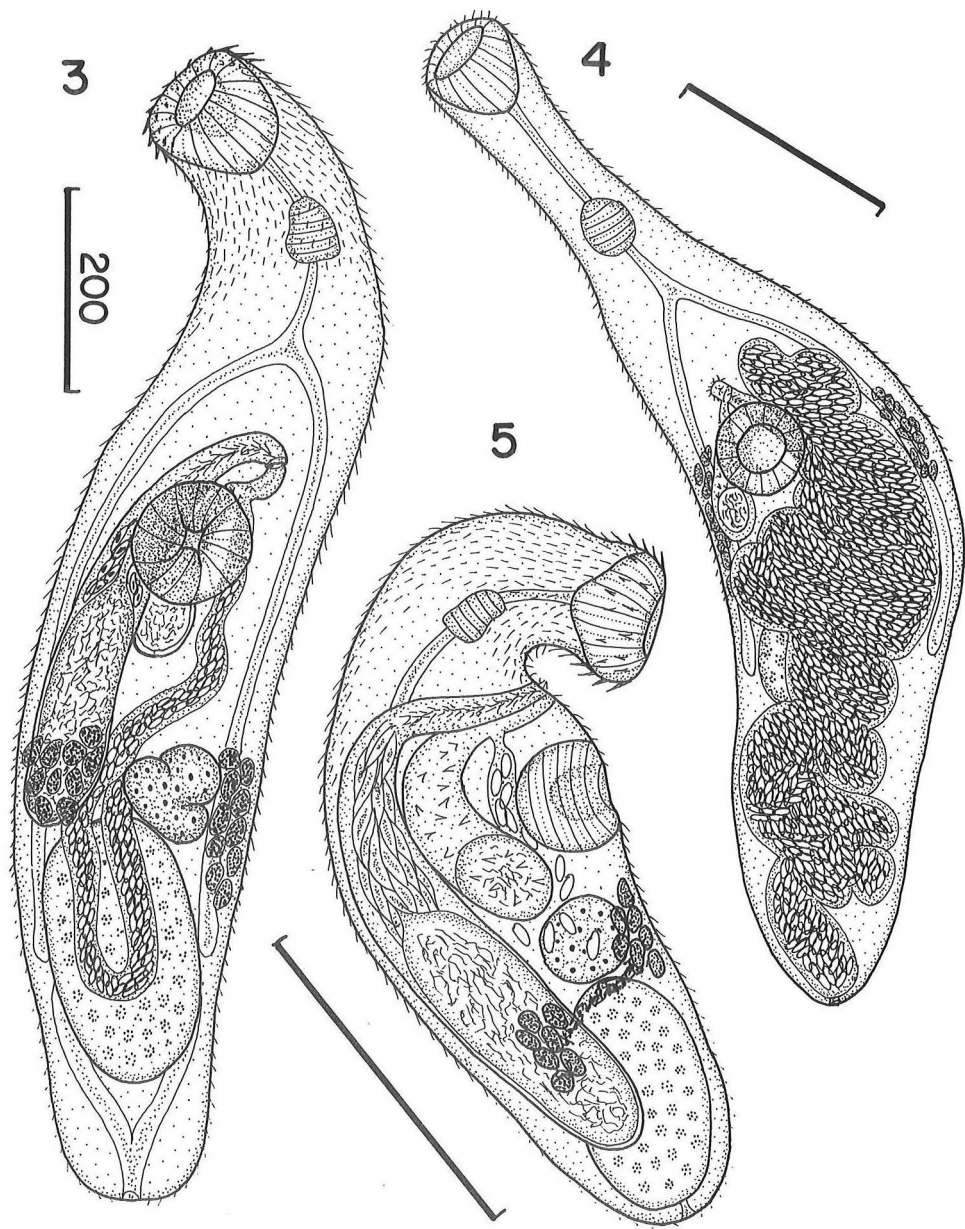
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Figs. 1 and 2:

1: *Paraproctotrema delicata* sp. nov. (ventral view).

2: *Sphericomonorchis spinulosus* gen. et sp. nov. (ventral view). All scale bars = 200 μ m.



Figs. 3-5:

3 and 5: *Genolopa magnacirrus* sp. nov. (ventral and lateral views).

4: *Paraproctotrema delicata* sp. nov. (ventral view). All scale bars = 200 μ m.